

REMARKS

Claim 16 includes a minor amendment which is believed to clarify the "wherein" clause in full satisfaction of 35 U.S.C. 112, paragraph 2. And, claim 17 has been amended for clarity.

Independent claim 16 and all the depending claims 17 to 22 are believed to define the invention in a clearly patentably distinguishable manner over the Braddick 5,595,247 reference and the British 2 313 391A patent to Smith, whether considered alone or in combination.

At numbered paragraph 5 of the Action, Braddick is said to disclose all the features of claim 16 other than the feature of the mill being secured to the whipstock. It is important to emphasize that claim 16 defines at lines 15, 16 a "mill deflecting slope" which is formed by "the first ramp surface and the extension [to the first ramp surface formed by the protrusion]". It is then important to understand that the invention as defined in claim 16 is concerned with a whipstock casing milling system of the type wherein the milling elements of the window mill are engaged with and are deflected by **the relatively steep ramp surface**. In this regard, it will be seen that claim 16 defines between lines 6 and 11 "a window mill . . . operable in use to form an opening in a wellbore casing . . . [with] milling elements of the window being engaged with and deflected by the first ramp surface . . . as the window mill is rotated and forced along the first ramp surface." The present invention is therefore concerned with the type of milling system disclosed in the British reference to Smith rather than the Braddick prior art.

In the third bullet point on page 3 of the Action, reference is made to the Braddick system and it is stated that "the milling elements of the mill engage the first ramp and are deflected by that ramp laterally into the casing." Reference is made to Fig. 9 of the Braddick patent. The implication therefore is that the Braddick system is of the same type as the present. This is, however, simply not the case. The milling elements of the mill do not engage the first ramp (within the meaning of claim 16 of the present application). This is quite clear from Fig. 9 of Braddick where a considerable gap between mill blades 262 and first ramp 259 can be seen. The purpose of having a gap is to ensure that the first ramp 259 is not damaged by blades 262 and this is achieved by providing the leading end of mill 256 with a nose/pilot portion 258. It is this nose portion 258 which engages first ramp 259 (see col. 14, ll. 41 to 43 of Braddick). Nose-portion 258 cannot be regarded as milling elements of the window mill. By virtue of nose portion 258, the Braddick system allows a window to be opened in a wellbore casing without any damage to first ramp 259. Ramp extension 260 which nose portion 258 inevitably engages is certainly milled by the milling elements/blades 262 (as can be seen in Fig. 9a), however, the protrusion/ extension 260 is distinct from the first ramp surface within the meaning of claim 16.

By providing a nose piece 258 on the leading end of the mill 256, the Braddick system is far less susceptible to whipstock damage than the type of system with which the present invention and the Smith (British reference) prior art is concerned. With this latter type of system, there is no nose piece provided and the milling elements engage directly with the first ramp surface and are therefore highly likely to cause considerable damage to

the ramp surface. Although this damage is a significant disadvantage over the Braddick type of system, an advantage over the Braddick system can be found in the one-trip milling process which requires only one run into a wellbore. This has been pointed out in the last response. However, in view of the comments set forth in the middle paragraph on page 3 of the outstanding Action, it appears there remains some misunderstanding. It is stated in the official Action that the Braddick apparatus may be converted to a one-trip system by securing the mill to the whipstock as taught by Smith. However, the point not recognized in that statement is that once the Braddick milling blades 262 have cut through the wellbore casing, mill 256 becomes jammed between the whipstock and the casing because of the presence of nose portion 258. This is illustrated in Fig. 9(a) and is explained at col. 14, ll. 56 to 58 of the patent. Accordingly, in order for milling to continue, the starter mill 256 must be pulled uphole and replaced with a window mill 266 (see Fig. 11 and col. 14, ll. 59 to 63 of Braddick). Thus, although the Braddick system does not damage the first ramp surface, it is certainly not a one-trip system and as a result is time consuming and costly. In contrast, the Smith apparatus is a comparatively quick one-trip system but results in damage to the first ramp surface. The present invention as defined by claim 16 has the advantages of the Braddick and Smith systems without the disadvantages. In other words, the system of claim 16 allows a lateral wellbore to be milled in a single trip without damage to the first ramp surface of the whipstock. This cannot be achieved by merely securing the Braddick mill 256 to the Braddick whipstock as suggested by the examiner in his rejection under numbered paragraph 5 of the Action. The arguments made in the official Action concerning obviousness are therefore believed unsupported.

In numbered paragraph 6 of the Action, the argument is made that it would be obvious in view of Braddick to modify the Smith prior art so as to arrive at the system defined by claim 16. However, the Braddick document does not simply teach that a protrusion 260 will alone solve problems of wear with a first ramp surface on a whipstock. On reading the Braddick document, it is apparent to one having ordinary skill in this art that the provision of the nose portion 258 is the primary feature for reducing wear. It is this feature which spaces the blades from the ramp surface and completely prevents wear caused on the ramp surface by the blades. Indeed, at least an initial portion of the ramp surface would be protected by the nose portion 258 even in the absence of the ramp extension 260. The remaining portion of the ramp surface is protected by the nose portion and extension **cooperating** with each other (see Fig. 9 and col. 14, ll. 43 to 50 of Braddick). Thus, the skilled artisan would not understand from the Braddick document that the provision of a ramp extension alone could solve the ramp wear problem of the Smith prior art. Indeed, because the Braddick system is of a fundamentally different type to that of the Smith system (comprising a nose portion 258 for maintaining milling blades 262 spaced from the first ramp surface), it is likely that a skilled artisan would even refer to the Braddick document. For these reasons, the examiner's obviousness rejection of claim 16 does not appear valid.

With regard to the indefiniteness rejection set forth in numbered paragraph 3 of the Action, the "wherein" statement is believed entirely consistent with the application as filed and in itself appears self-explanatory. Nevertheless, the minor amendments made to claim 16 are believed to further improve the clarity of the claim. With specific

reference to the examiner's concerns, the description as a whole and particularly pages 5 and 6 of the parent International application as published discusses the ramp extension and how the length of this extension is important to controlling the stress levels in the first ramp surface. It will be understood that, without the ramp extension, the contact area between the mill and the ramp surface decreases as the mill moves up the ramp surface and projects off the end of the ramp surface. The same force applied by the mill over a decreasing area of the ramp surface results in an increase in stress in the ramp surface. When a critical level of stress is attained, the ramp surface will begin to be rapidly worn by the mill. The purpose of the extension is to delay the moment when this critical stress level is attained. More specifically, by carefully selecting the length of the extension, the critical stress level will not be attained until the mill is completely moved from the first ramp surface and is supported only by the extension. This is set forth in claim 16 with the clarity and conciseness required by the second paragraph of section 112 of the statute.

For the foregoing reasons, it is believed that claim 16 and all its dependent claims 17 to 22, which respectively defines various sub-features of the invention, claim the invention in a manner not taught by nor reasonably suggested or implicated by either the Braddick or the British reference to Smith, whether taken alone or in combination. It is therefore respectfully requested that claims 16 to 22 be allowed so that the entire case may be passed to early issuance.

Respectfully submitted,

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